

REMARKS

Reconsideration of this application, in view of the foregoing amendment and the following remarks, is respectfully requested.

Claims 1-12 were originally presented for consideration in this application. Claims 13-20 were added by previous amendment. Accordingly, claims 1-20 are currently pending in this application.

The following rejections, objections, and requirements were set forth in the Office Action:

1. Claims 1-6 stand rejected as indefinite under 35 USC §112.
2. Claims 7 and 12 stand rejected as indefinite under 35 USC §112.
3. Claims 8-12 stand rejected as indefinite under 35 USC §112.
4. Claims 1-5 and 7 stand rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 4,716,965 (Bol).
5. Claim 6 stands rejected under 35 USC §103(a) as being unpatentable over Bol in view of U.S. Patent No. 2,230,626 (Miller).
6. Claims 8-12 stand rejected under 35 USC §103(a) as being unpatentable over Bol.
7. Claims 13-20 stand rejected under 35 USC §103(a) as being unpatentable over Bol in view of U.S. Statutory Invention Registration No. H1932 H (Heathman).

Regarding the indefiniteness rejections of claims 1-6, please note that independent claim 1 has been amended above to delete the offending “independent of

the tubular structure” language therein. Accordingly, withdrawal of the indefiniteness rejections of claims 1-6 is respectfully requested.

Regarding the indefiniteness rejections of claims 7 and 12, please note that these claims have been amended above to delete the offending “substantially” word therein. Accordingly, withdrawal of the indefiniteness rejections of claims 7 and 12 is respectfully requested.

Regarding the indefiniteness rejections of claims 8-12, please note that independent claims 8 has been amended above to delete the offending “extending” verb therein, which is replaced by “installing.” Accordingly, withdrawal of the indefiniteness rejections of claims 8-12 is respectfully requested.

Regarding the anticipation rejections of claims 1-5 and 7 over the Bol reference, please note that independent claim 1 has been amended above to recite that the annular element includes an expandable material which extends from a retracted state to an expanded state in response to contact with a fluid in the well system. In contrast, Bol describes flexible sheaths which expand in a resilient manner to seal off spaces between casing and cement. The flexible sheaths would resiliently expand whether or not any fluid were present, and clearly the flexible sheaths do not expand in response to contact with any fluid.

Therefore, Bol does not anticipate claim 1 as amended above. Accordingly, withdrawal of the anticipation rejections of claims 1-5 and 7 is respectfully requested.

Regarding the obviousness rejection of claim 6, please note that this claim is allowable due to the allowability of its independent claim 1. In addition, a *prima facie* case of obviousness has not been made out since all of the limitations are not described or suggested in the combination of references proposed in the Office Action.

Accordingly, withdrawal of the obviousness rejection of claim 6 is respectfully requested.

Regarding the obviousness rejections of claims 8-12 over the Bol reference, please note that claim 8 recites extending the expandable material into contact with the wall of the borehole. Bol specifically teaches that the thickness of the sheaths should be as low as possible in order to avoid obstructions of the flow of the cement slurry through the annulus during cementation and to create an annular cement mass with an almost uniform thickness throughout its height (col. 3, ll. 36-41). The purpose of the sheaths is to compensate for relatively minor (micro) displacement of the cement relative to the casing as the cement hardens (col. 2, ll. 50-62).

Bol does not disclose or suggest extending the expandable material into contact with the wall of the borehole as recited in claim 8. Instead, as pointed out above, Bol actually teaches away from using a sheath which would be thick enough to seal against the borehole.

Thus, the rejections do not satisfy the requirements set forth in the seminal U.S. Supreme Court case of *Graham v. John Deere* for evaluating whether an invention would have been obvious to a person of ordinary skill in the art at the time the invention was made. These requirements include determining the level of skill of the person having ordinary skill in the art, the scope and content of the prior art, and the differences between the claimed invention and the prior art. Additional considerations may include factors such as failure of others to solve the relevant problem, long felt but unsatisfied need, skepticism of others, teaching away in the prior art, unexpected results, copying, the pace of innovation in the art, commercial success, industry accolades, etc.

In the *Graham v. John Deere* opinion, the Supreme Court also explicitly warned against “slipping into use of hindsight” in obviousness determinations. *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966). Additionally, in the more recent case of *KSR v. Teleflex*, the Supreme Court has reiterated that an invention’s merit is not to be evaluated from a perspective of a person having the benefit of already knowing the

solution conceived by the inventor, but rather as it would have been perceived by a person having only ordinary skill in the pertinent art. *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742-43 (2007).

In the present case, the person having ordinary skill in the art would likely have a bachelor's degree in engineering or a related applied science field, and would likely have several years' experience in designing sealing systems for use in subterranean wells.

The scope and content of the prior art have been discussed above. Bol specifically teaches that a foam sheath can be used to seal off "micro"-annulus spaces between casing and cement when the cement hardens, but teaches directly away from making the sheath any thicker, for to do so would interfere with cement flow in the annulus surrounding the casing.

The Board of Patent Appeals and Interferences recently addressed this issue in *Ex Parte Whalen II* (Appeal 2007-4423, July 23, 2008) as follows:

The U.S. Supreme Court recently held that rigid and mandatory application of the "teaching-suggestion-motivation," or TSM, test is incompatible with its precedents. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). The Court did not, however, discard the TSM test completely; it noted that its precedents show that an invention "composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *Id.*

The Court held that the TSM test must be applied flexibly, and take into account a number of factors "in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed." *Id.* at 1740-41. Despite this flexibility, however, the Court stated that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the way the claimed new invention does." *Id.* "To facilitate review, this analysis should be made explicit." *Id.*

[W]hen the prior art teaches away from the claimed solution as presented here . . . obviousness cannot be proven merely by showing that a known composition could have been modified by routine experimentation or solely on the expectation of success; it must be shown that those of ordinary skill in the art would have had some apparent reason to modify the known composition in a way that would result in the claimed composition.

In the present case, no convincing reasoning has been presented as to why a person skilled in the art would have been motivated to make the invention recited in the

claims. Instead, the cited Bol reference teaches directly away from the claimed invention, as in the *Ex Parte Whalen II* case (in which the Board reversed an obviousness rejection). Accordingly, withdrawal of the obviousness rejections of claims 8-12 is respectfully requested.

Regarding the obviousness rejections of claims 13-20, please note that independent claim 13 recites expanding the expandable material into the space in response to contact between the expandable material and the fluid. In contrast, Bol discloses that the sheaths will interrupt the propagation of a micro-annulus along the casing because of the resilient tendency toward expansion of the foam layers of the sheath (col. 3, ll. 3-14). Bol does not disclose or suggest that the expandable material expands into the space in response to contact between the expandable material and a fluid.

Heathman is cited for its disclosure of residual fluid on the surfaces of the tubular structure and the wellbore that may interfere with cement bonding. However, Bol specifically provides instructions for ensuring that all drilling fluid is displaced from the annulus (col. 2, ll. 41-49). Therefore, persons of ordinary skill in the art would have no motivation to consult Heathman if they were following the teachings of Bol.

Thus, a *prima facie* case of obviousness is not made out, and in addition, there is no motivation to combine the teachings of the references. Accordingly, withdrawal of the obviousness rejections of claims 13-20 is respectfully requested.

In view of the foregoing amendment and remarks, all of the claims pending in this application are now seen to be in a condition for allowance. A Notice of Allowance of claims 1-20 is therefore earnestly solicited.

The examiner is hereby requested to telephone the undersigned attorney of record at (972) 516-0030 if such would expedite the prosecution of the application.

Respectfully submitted,

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I hereby certify that this correspondence is being
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